WHAT IS CLAIMED IS:

1. An isolated nucleic acid sequence encoding a hSMMyHC polypeptide, wherein the polypeptide has the following properties: (i) the polypeptide's activity includes ATPase function or the ability to bind actin; and (ii) the polypeptide has an amino acid sequence which has greater than 70% sequence identity with SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 as measured using a sequence comparison algorithm.

2. An isolated nucleic acid sequence of claim 1, wherein the protein specifically binds to polyclonal antibodies generated against a protein comprising SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14v

3. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid encodes SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.

4. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid has a nucleotide sequence of SEQ ID NO1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.

5. An isolated nucleic acid sequence of claim 1, wherein the nucleic acid selectively hybridizes under stringent hybridization conditions to a nucleic acid having a sequence of or a complementary sequence to SEQ ID NO1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.

6. An expression vector comprising a nucleic acid encoding an hSMMyHC polypeptide, wherein the protein has the following properties: (i) the protein's activity includes ATPase function or the ability to bind actin; and (ii) the protein has a sequence that has greater than 90% amino acid sequence identity to SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14as measured using a sequence comparison algorithm.

7. A host cell transfected with the vector of claim 6.

8. An isolated hSMMyHC polypeptide, wherein the protein has greater than 90% amino acid sequence identity to SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14 as measured using a sequence comparison algorithm.

9. An isolated protein of claim 8, wherein the protein specifically binds to polyclonal antibodies generated against a protein comprising SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.

10. An isolated protein of claim 8, wherein the protein is SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.

11. A method for screening for modulators of an hSMMyHC polypeptide, the method comprising the steps of:

(i) providing biologically active hSMMyHC polypeptide, wherein has the following properties: (i) activity including ATPase function or the ability to bind actin; and (ii) sequence that has greater than 90% amino acid sequence identity to SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.as measured using a sequence comparison algorithm;

(ii) contacting biologically active hSMMyHC polypeptide with a candidate agent in a test and control concentration; and

(iii) assaying for the level of hSMMyHC polypeptide activity, wherein the hSMMyHC polypeptide activity is selected from the group consisting of actin binding activity or ATPase activity, and wherein a change in activity between the test and control concentration indicates a modulator.

12. A method of claim 11, wherein the screening occurs in a multi-well

plate as part of a high-throughput screen.

13. A method of claim 12, wherein the biologically active hSMMyHC polypeptide comprises an amino acid sequence of SEQ ID NO:2; SEQ ID NO:4; SEQ ID NO:6; SEQ ID NO:8, SEQ ID NO:10, SEQ ID NO:12, or SEQ ID NO:14.

14. An isolated nucleic acid comprising a sequence which has greater than 80% sequence identity with a nucleotide having a sequence of or a complementary sequence of SEQ ID NO1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.

15. The nucleic acid of claim 14 having a sequence of or a complementary sequence of SEQ ID NO1; SEQ ID NO:3; SEQ ID NO:5; SEQ ID NO:7, SEQ ID NO:9, SEQ ID NO:11, or SEQ ID NO:13.